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ABSTRACT

The aims of this study were: (1) to specify who the infant-mother relationship evolves, and (2) to demonstrate how the development of object concept affects the evolution of that relationship. Subjects were 19 male and 17 female Caucasian infants from 4 to 12 months of age. The development of an interpersonal relationship was assessed through the use of controlled interaction situations with an adult stranger and identical situations with infants' mothers. Situations included imitative play and speech, creating a stress situation, and leaving and entering the room. Results indicate that the infants did exhibit differential responsiveness towards their mothers versus a stranger. Findings also show that when the infant solidifies his notions of object permanence and becomes capable of inferring the mother's location from a series of visible displacements, maintaining proximity contact and/or interaction with the mother becomes less crucial. The acquisition of object permanence facilitates the ordering of experiences. Simultaneously, the infant's perception of regularities in the mother's appearance and behavior contributes to his imbuing her with the quality of permanence through time and space. It seems highly probable that it is this reciprocity or mutual influence which characterizes the relationship between development of the infant-mother relationship and object concept development. (Author/MK)

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INFANT-MOTHER RELATIONSHIP AND OBJECT CONCEPT[1]

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The aims of the present study were: (1) to specify how the infant-mother relationship evolves, and (2) to demonstrate how the development of object concept (Piaget, 1954) affects the evolution of the infant-mother relationship. The approach differs from that of previous studies with similar goals (Bell, 1970; Decarie, 1965) in three major ways. First, the definition of the infant-mother relationship and of the criteria for determining the presence of a relationship are based upon a conception of the broader construct "interpersonal relationship". Second, the formation of the infant-mother relationship is analyzed in accord with the Werner-Kaplan orthogenetic principle of development. Lastly, interaction between object concept development and particular components of the infant-mother relationship in the course of the infant's first year are more specifically examined.

A review of the literature revealed that the infant-mother relationship has not been studied within the broader context of interpersonal interaction. It seems useful to define "interpersonal relationship" in sufficiently general terms which would be applicable irrespective of the age, sex, and goals of the pair involved. More significantly, such a definition would have heuristic value for developmental studies. Broadly defined criteria would render it possible to assess with greater continuity the development of a

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particular relationship, e.g., the infant-mother relationship. One of the central problems in current research on development of the infant-mother relationship is that the criteria used are too restricted, anchored as they are in behavioral patterns which either disappear or become less pronounced at a higher level of development. The definition proposed would minimize this problem, since the use of classes of response rather than actual behavioral patterns in operationally defining the infant-mother relationship would allow for changes in behavioral indices with development. Despite the use of diverse behavioral indices at different levels, it would still be possible to examine how the broader categories defining a relationship are functionally interrelated.

Accordingly, it seemed that a more fruitful way of conceptualizing an interpersonal relationship might be to define it as a hypothetical construct denoting a bond between two individuals which is behaviorally manifested in reciprocal interaction, with each individual serving as the "object" for the other, and the interaction being characterized by at least four discernible components: (1) affect exhibited towards the object, (2) approach towards the object, (3) discrimination of the object as being in some way different from one's self and from others, and (4) a set of expectancies concerning the object in the relationship. An interpersonal relationship would be said to exist when all of these components are manifested, focused on a single individual.

In the present study, development of an interpersonal relationship was examined in terms of the orthogenetic principle of development which states that, "Insofar as development occurs in a process under consideration, there is progression from a state of relative undifferentiatedness to a state of increasing differentiation and hierarchic integration (Kaplan, 1967, pp. 82-83)." Applying this to the infant-mother relationship,

development may be said to occur if there is differentiation and hierarchic integration among the four hypothesized components of an interpersonal relationship. Each component, e.g., approach, gradually emerges and becomes increasingly distinct, and, futhermore, the four components become hierarchically integrated; that is, one component becomes subordinated to the other so that an organized sequence is established among them. For example, the manifestation of expectancy toward the mother presupposes discrimination, and is apt to be followed by approach and affective behavior.

The hypothesis that there is a relationship between development of object relations and development of object concept as defined by Piaget (1954) was investigated by Decarie (1965) who found a significant correlation of .816 between measures of object concept and of object relations administered to 90 infants. In the present study, not only was the infant-mother relationship defined differently but the ties of its separate components to object concept development were also examined.

Subjects. The sample for this study was composed of 19 male and 17 female Caucasian infants selected so that every month of age between four and twelve months was represented by 4 subjects, giving 12 subjects for each of the last three quarters of the first year. Each subject had at least one older sibling, but with an age difference no greater than six years. At the time of testing, every infant was within a week of his or her birthday for that month.

Observation Measures. The development of an interpersonal relationship was assessed through the use of a series of controlled interaction situations with an adult, constructed specifically for this study. A total of 17 situations were enacted, each

designed to elicit affect, approach, discrimination, and expectancy behavior in the course of interaction. The specific situations, described in terms of what the adult is required to do, were as follows:

1. Giving a familiar toy to the infant.
2. Getting a familiar toy from the infant.
3. Imitative play.
4. Imitative speech.
5. Preparing for a meal.
6. Giving a novel toy to the infant.
7. Getting a novel toy from the infant.
8. Creating a distress situation.
9. Leaving the room.
10. Speaking to the infant.
11. Speaking to the infant, using the infant's name.
12. Staying outside the room.
13. Remaining in the room with the infant.
14. Entering the room.
15. Picking up the infant.
16. Holding the infant.
17. Departure.

A score for affect was given whenever the infant manifested such expressive behavior as a smile, laughter, a whimper, or a cry. Approach was scored whenever the infant exhibited visual or motor movement directed towards the adult, as when the infant looked at or reached toward, or crawled to the adult, or when the infant responded cooperatively to the adult's overtures. A score for expectancy was given whenever the infant behaved as if he anticipated what the partner's next response might be. Whenever the infant's responses to the mother differed from his response to the stranger, he was given a score for discrimination. A score of 1 was given for each component manifested in a situation. The highest possible score for any one situation was 4. Differential responsiveness was assessed by comparing the infant's responses when the tasks were

carried out by the mother versus a stranger.

A scale for visual pursuit and permanence of objects, devised by Uzgiris and Hunt (1966) was used to measure object concept development. This scale consists of a sequence of 14 behavioral items representing a finer grading of steps in the evolution of the concept of object than was specified by Piaget's six stages. Each subject was assigned a score equivalent to the highest item successfully accomplished.

Procedure. Each subject was tested individually on the interpersonal relationship scale and on the Uzgiris and Hunt scale. The former was always administered first, at the infant laboratory of Clark University, the latter at the subject's home. Observations of infant-adult interaction were conducted in a medium-sized laboratory room, with toys on the floor, a high chair or infant seat or walker for the infant, chairs for the adults, and other furniture intended to create a living room atmosphere. The interpersonal relationship scale was administered twice for all subjects, once with the mother and once with the stranger as the adult partner in the interaction. The same female college student acted as the stranger for all of the subjects. Mother and stranger presentations were counter-balanced across subjects. General instructions pertaining to the interaction were given to the mother before each session. Directions for specific situations were provided immediately preceding their enactment. For each adult partner, administration of the interpersonal relationship scale lasted approximately thirty minutes.

Administration of the Uzgiris and Hunt scale was accomplished according to instructions set forth by the authors.

Observations were always recorded by the experimenter. Administration of the interpersonal relationship scale to five subjects, ages 2, 5, 8, 10, and 11 months, res-

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pectively, was videotaped. Based on these recordings, inter-observer reliability as measured by a Pearson r was .84 for the scores on approach, .74 for affect, and .85 for expectancy.

RESULTS

One of the concerns of this study was to demonstrate that an interpersonal relationship - in this particular case, the infant-mother relationship - can be defined operationally as differential responsiveness manifested by one individual to another through discriminative affect, approach and expectancy behaviors. The subjects did indeed exhibit differential responsiveness towards their mothers versus a stranger. Starting with the youngest group studied, differences occurred in affective, approach, and expectancy behaviors towards the mothers versus a stranger, and they continued to be manifest at the older ages. Analysis of variance indicated that for each of the components mentioned, differential responsiveness towards the mother in contrast to a stranger was highly significant ($p < .001$) for all ages combined.

However, what might be particularly significant in understanding the development of the infant-mother relationship is to examine how the manifestations of each component change at different age periods. In order to test the hypothesis that development of the infant-mother relationship is characterized by increasing differentiation among each of the components, age differences in their manifestations as directed towards the mother were analyzed. Discriminative behavior was found to increase with increasing age but not in a statistically significant manner. As early as the second quarter, infants behave differentially towards their mothers versus a stranger. Such differential responsiveness increases with increasing age, but older infants do not discriminate significantly more

than younger infants.

There were no significant age differences when positive and negative affective reactions were combined together for analysis, but interesting trends were revealed when they were treated separately. In contrast, approach and expectancy behaviors showed significant age trends. When approach behaviors toward the mother were subjected to a one-way analysis of variance, the effect for age group was significant at the .05 level. Subjects in the third quarter of the first year showed more approach responses toward the mother than did those in the second quarter, but the highest number of approaches was manifested by the oldest group of infants. Age differences in expectancy behaviors were also highly significant ($F = 7.73$, $p < .001$). At each quarter there was a significant increase in the number of expectancy behaviors.

To determine whether development of the infant-mother relationship follows a progression involving not only differentiation but also hierarchic integration of the components, a one-way analysis of variance was performed on integration scores (number of situations in which the four components were manifested simultaneously) with the mother as object of the interaction. This revealed statistically significant age differences ($F = 11.82$, $p < .001$). At each successive quarter following ages 4-6 months, there was a significant increase in the number of simultaneously integrated manifestations of all the components.

The second aim of this study was to investigate the relationship between development of object concept and development of the infant-mother relationship. For the entire sample, with age held constant, a correlation of .40 between scores on the Uzgiris and Hunt scale and scores on the interpersonal relationship scale was obtained which is significant at the .05 level. When the relationship was analyzed for each age

represented, it was found that in the second quarter, the correlation is virtually nil ($r = .009$). The highest correlation ($r = .25$) was obtained in the third quarter. The relationship persists, though to a lesser degree ($r = .14$) in the last quarter of the first year.

The relationship between object concept and each of the four components of an interpersonal relationship during different periods of the infant's first year was also analyzed. For both approach and affect, a positive correlation was found to exist in the third quarter ($r = .27$ for approach and $r = .40$ for affect), but a low negative correlation was obtained in the succeeding quarter. In contrast, there was a consistently positive correlation between expectancy and object concept during the third ($r = .14$) and fourth ($r = .16$) quarters of the first year.

DISCUSSION

The discussion will focus on the findings concerning the relationship between development of the infant-mother relationship and object concept development.

In the present study, a significant correlation was obtained between the subjects' scores on object concept and their total scores on interpersonal relationship measures, thus providing support for the hypothesis that there is a relationship between development of the infant-mother relationship and object concept development. The correlation obtained from the present investigation is lower than that reported by Decarie (1965), a discrepancy which may be partly accounted for by the fact that the possible effects of age were partialed out in the present study but not the earlier one. The use of different measures of object concept and interpersonal relationship, as well as the

inclusion of an older (13-20 months) group of infants in the Decarie study may have contributed to the difference in the size of the correlation coefficients obtained in the two studies.

A more interesting question pertains to the nature of the relationship between development of the infant-mother relationship and object concept development. There are several ways of conceptualizing this hypothesized relationship. One way is to view development of the object concept and development of the infant-mother relationship as parallel events which occur more or less simultaneously but are completely independent of one another. Given that a statistically significant relationship between object concept development and development of the infant-mother relationship has been found in several studies (Decarie, 1965; Bell, 1970), including this one, this view does not seem tenable. Another veiwpoint is that the relationship may be expressed in antecedent-consequent terms, with object concept being a precursor to the formation of the infant-mother relationship. The problem with such a conceptualization is that it assumes that the existence of an interpersonal relationship and of object concept is an either-or matter, rather than an on-going process. Finally, the relationship between development of an infant-mother relationship and development of object concept might be conceptualized as a reciprocal relationship. Development of the infant-mother relationship promotes the kinds of experiences which facilitate the intercoordination of schemata which lead the infant to imbue the mother and other objects with permance and substantiality. On the other hand, progress in object concept development enables the infant to move from a state of relative undifferentiation from the mother to one where there is polarity between him and the mother as object. Such differentiation of the other, and of the self from the other, promotes increasing "mutuality" which in turn leads to more

interactions that allow for increased objectification.

The findings of the present study provide some support for the viewpoint that there is a reciprocal relationship between development of object concept and the evolution of the infant-mother relationship. It is not surprising to find a lack of correlation between scores on object concept and scores on interpersonal relationship at the second quarter, since it is usually not until the eighth month that acquisition of the rudiments of object concept have been noted. As the infant begins to acquire the notion of object permanence, he correspondingly manifests an increase in relating behaviors. However, the degree of the relationship between object concept and the infant-mother relationship changes in the course of the first year of life. At about the time when the infant is just beginning to grasp the rudiments of object concept, he engages in a great deal of approach behaviors toward the mother who also serves as an object for him. It is almost as if interaction with the object is actively sought. It has been noted elsewhere (Ainsworth, 1967) that the hallmark of attachment behavior during the third quarter of life is the initiative which the infant takes in interacting with the mother through following, greeting, and approaching her. The beginnings of object concept may facilitate proximity seeking even when the mother is temporarily out of perceptual range. In addition, the infant's expressions of positive and negative affect help the infant in achieving proximity, contact, or social interchange. In turn, given the amount of interaction and degree of affective behavior, the relationship is enhanced. More often than not, mothers respond attentively to the infant's approach behaviors and especially to his smile and cries.

The finding of a decrease in the correlation between scores on object concept and scores on approach behavior in the fourth quarter suggests that when the infant solidifies

his notions of object permanence and becomes capable of inferring the mother's location from a series of visible displacements, maintaining proximity contact, and/or interaction with the mother becomes less crucial. He may be less likely to try to maintain contact with her when she moves away from him to perform her chores while remaining in the same room. Her leaving the room is apt to provoke less following and crying, and her return is more likely to be accepted casually. The reappearance of the mother no longer evokes as much surprise, interest, and delight as at the preceding quarter.

In terms of expectancy, the higher the child's level of object concept attainment, the more likelihood that he manifest expectancy behavior toward the mother, and vice versa. Consistently, as the infant begins to attribute permanence to the mother as an object, he manifests a gradual increase in behaviors from which one might infer that he has learned a set of expectancies concerning the mother. It is quite possible that development of object concept and the learning of expectancies may occur independently of each other. Still, it is not unreasonable to suppose that there might be an interaction between them. The infant who has attained the rudiments of object permanence and grasps the notion that objects continue to exist independent of his perceptual field can recognize that the object in front of him is the same object, with the same characteristics, that he encountered previously. The acquisition of object permanence facilitates the ordering of experiences. Simultaneously, the infant's perception of regularities in the mother's appearance and behavior contributes to his imbuing her with the quality of permanence through time and space. It seems highly probable that it is this reciprocity or mutual influence which characterizes the relationship between development of the infant-mother relationship and object concept development.

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